

# Application of Informed Consent Principles in the Emergency Department Evaluation of Febrile Children at Risk for Occult Bacteremia

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*Informed consent requires that the risks and benefits of a particular diagnostic and therapeutic plan be reviewed with the patient, including the disclosure of alternative diagnostic and treatment approaches. Although it could be argued that it is difficult to present all the diagnostic and therapeutic options to parents in the E.D. management of febrile children at risk for occult bacteremia, it is the purpose of this report to describe the experience with following these principles of informed consent in a group of these children.*

**Methods:** Convenience sample of febrile children presenting to an E.D. at risk for occult bacteremia. A standardized information sheet was presented. A parent survey of preferences followed.

**Results:** In 37 patients, most of the parents chose no tests and preferred to be involved in the medical decision making process for their child.

**Conclusions:** While preferred by parents and supported by AAP, the process of informed consent, for febrile children at risk for occult bacteremia, is time consuming and often not possible when the E.D. is busy. Physicians may find it desirable to make decisions from an informed consent perspective to a comfort level dependent on time availability, parents' comprehension ability, and individual personal practice preference.

**Keywords:** informed consent, occult bacteremia, otitis media, blood culture, white blood count

## Introduction

While the authority to make medical decisions used to rest solely with the physician (doctor knows best theory), this is now considered to be unacceptable.<sup>1</sup> In addition to sources in the medical literature<sup>2-6</sup> and court conclusions,<sup>6</sup> the American Academy of Pediatrics (AAP)<sup>1</sup> and the Joint Commission on Accreditation of Healthcare Organizations (JCAHO)<sup>7</sup> have confirmed support of informed consent, which requires that the risks and benefits of a particular diagnostic and therapeutic plan be reviewed with the patient. This review should include the disclosure of alternative diagnostic and treatment approaches.<sup>1-7</sup> Decision-making power or authority is increasingly seen as something to be shared by equal partners in the physician-patient or physician-parent relationship.<sup>1</sup> While reports in the literature have indicated that this is the proper approach to take, such a practice is time consuming.

In the evaluation of the febrile child at risk for occult bacteremia, sources in the literature have recommended divergent diagnostic and therapeutic approaches (Table 1).<sup>8-19</sup> According to informed consent principles, the management of such cases should include the disclosure of all these approaches.<sup>1-7</sup>

While physicians may assume that patients generally want more tests and more treatment in order to avoid as much risk as possible, a published survey of parents showed that parents often preferred the opposite of this (fewer tests, less treatment, more risk) in a hypothetical case scenario involving a 6-week old febrile infant.<sup>20</sup> This indicates that when a range of diagnostic and treatment options are presented to parents, they may often choose the less aggressive choice even if it involves more risk. This also indicates that true informed consent with full disclosure of alternatives, is often not practiced as a standard in this clinical scenario. Although it could be argued that it is difficult to present all the diagnostic and therapeutic options involved to parents, it is the purpose of this report to describe the experience with following the principles of informed consent in a group of actual children presenting to an E.D. with fever at risk for occult bacteremia. Quality of care may be improved by understanding this process better to determine ways of optimizing the informed consent process.

## Background

The emergency department evaluation of young febrile children (3 months to 3 years of age) at risk for occult bacteremia is a recognized controversy. Actual patient data supporting a single standardized diagnostic evaluation and treatment approach is lack-

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**Table 1.—Some recent recommendations in the literature for children at risk of bacteremia.**

Baraff (1993, expert panel practice guidelines)<sup>8,9</sup>

CBC if temperature  $\geq 39^{\circ}\text{C}$ . If WBC  $> 15,000$ , obtain a blood culture and treat with ceftriaxone. Obtain urine cultures in all males under 6 months and all females under 2 years who are treated with antibiotics. Less preferred option is to obtain a blood culture and treat all children with temperature  $> 39^{\circ}\text{C}$  with empiric antibiotics.

Baraff (1993, review article)<sup>10</sup>

Same recommendations as above.

Baraff (1992, management guidelines)<sup>11</sup>

Blood culture and empiric antibiotics. CBC is not recommended.

Bass (1993, 519 patients)<sup>12</sup>

WBC  $\geq 15,000$  and fever  $\geq 39.5^{\circ}\text{C}$  identify children at high risk and should be treated with antibiotics (amoxicillin/clavulinate or ceftriaxone). Routine treatment of others does not appear to be indicated.

Downs (1991, decision analysis)<sup>13</sup>

Blood culture and empiric antibiotics for all those at risk (2-4 months and rectal temperature  $> 39^{\circ}\text{C}$ ).

Fleisher (1994, 6680 patients)<sup>14</sup>

If empiric antibiotics are given, ceftriaxone provides a safe and effective alternative (better outcome profile compared to amoxicillin, however, not statistically significant).

Jaffe (1994, review article)<sup>15</sup>

CBC. Blood culture and empiric antibiotics if WBC  $> 10,000$  or WBC  $> 15,000$ .

Kramer (1989, decision analysis)<sup>16</sup>

No blood culture strategy has the greatest utility.

Lieu (1991, decision analysis)<sup>17</sup>

Blood culture and empiric antibiotics.

Long (1994, editor's column)<sup>18</sup>

No tests, no antibiotics as the preferred choice.

Singer (1995, review article)<sup>19</sup>

3-6 months: Urinalysis. Parenteral ceftriaxone is not effective. No blood work unless temperature exceeds  $41^{\circ}\text{C}$ .

6-24 months: CBC and blood cultures if temperature  $\geq 40^{\circ}\text{C}$ . Treat with parenteral antibiotics if WBC  $\geq 15,000$ .

While practice guidelines for the evaluation and treatment of these children have been published in the journals *Pediatrics* and *Annals of Emergency Medicine*,<sup>8,9</sup> published surveys of pediatricians demonstrate that there is substantial diversity in the management of these children and many pediatricians do not follow the recommendations in the published guidelines.<sup>23,24</sup> It is NOT the purpose of this report to examine the superiority of one strategy over another.

## Methods

A single page information sheet was drafted explaining bacteremia, urinary tract infection, meningitis, and pneumonia (see appendix A). Children were evaluated in the emergency department by the author (single investigator) during a normal shift schedule in a pediatric E.D. Parents were given this information sheet if all of the following criteria were met:

- Age 3 to 36 months.
- Temperature  $> 38.9^{\circ}\text{C}$  ( $102^{\circ}\text{F}$ ) in the E.D. or by reliable history.<sup>8</sup>
- No hard indications to perform tests or administer parenteral antibiotics.
- Child is active, alert, not toxic, not irritable.
- No specific physical examination signs of meningitis, urinary tract infection, pneumonia, or sepsis. Specifically, the following were documented: anterior fontanelle (if present) flat, neck supple, not fussy when bounced, no costovertebral angle tenderness evident, lungs clear to auscultation, no tachypnea, not coughing much, oxygen saturation in room air 98% or higher, no petechia, normal color, and normal perfusion. Patients were excluded if more than two episodes of diarrhea (per day) were present. Otitis media was not a basis for exclusion.
- The physician had enough time (15 minutes minimum) to thoroughly review the information sheet with the parents (i.e., low E.D. patient census at the time).

The information sheet was reviewed with the parent(s) verbally. Following this lengthy verbal explanation, parents were given the information sheet to review on their own. All their questions were answered. All parents claimed that they understood the form. They were encouraged to ask more questions following all explanations.

A Tests and Treatment Selection sheet (see appendix B) was verbally reviewed with parents. The treating physician made a recommendation for laboratory work and antibiotics. It was made clear to patients that a different physician may justifiably make a totally different recommendation. It was made clear that the physician's recommendation is not necessarily what their private physician would do. It was made clear that they would not be offending the physician if they did not follow the physician's recommendation. Parents were then asked about their preferences on the diagnostic tests to be performed and the treatment. Parents were given the option of not deciding (i.e., accepting the physician's recommendation). Once parents made a decision, the advantages and disadvantages of their decision were again reviewed with them to be certain that they understood the risk level involved in their choice.

Clinical and demographic information were collected on these patients. Parent choices were stratified by demographics. There is no control group involved. Presumably, a control group would be

ing. Most of the controversy stems from a subjective sense of risk tolerance. Most studies and reports in the literature on this topic have identified the children at risk for occult bacteremia as those from 3 months to 36 months of age with a fever (most commonly defined as greater than or equal to  $39^{\circ}\text{C}$ ).<sup>8,9,13,17,18</sup>

Reports which focus on avoiding risk (risk averse) have recommended blood cultures and parenteral antibiotics for most or all children at risk of bacteremia.<sup>13,17</sup> Other reports which accept prudent risk have recommended observation.<sup>18</sup> Other reports have recommended that white blood counts be used to assist in the decision to administer antibiotics.<sup>8,9,12,15</sup> If antibiotics are to be administered, the decision of parenteral or oral antibiotics must be made on similar risk tolerance criteria.<sup>12,14,15,21,22</sup>

one in which parents had no control in any of the clinical decisions. Such a control group would be highly biased by the treatment that is imposed upon them by their physician. Thus, the statistics are presented as descriptive only (no inferential statistics).

Antipyretics were administered to all patients (either at home or in the E.D.). Temperatures were rechecked in most patients before discharge.

This study was presented to the medical center's institutional research board (IRB) for review. IRB approval was obtained.

## Results

The results of 37 E.D. patients are summarized in tables 2 and 3. Ages ranged from 3.5 to 35.6 months of age (mean 14.4 months, standard deviation 9.4). Parents accompanying children ranged in age from 17 to 42 years of age (mean 28, standard deviation 7). In instances when both parents accompanied the child to the E.D., the age of the "dominant parent" was used as the parent's age for that child (tables 2 and 3). The dominant parent was the one who appeared to be making most of the decisions. Of the 37 patients, mothers were present alone in 21 cases, fathers were present alone in 2 cases, and both parents were present in 14 cases. Of the 14 cases when both parents were present, the mother was assessed as being the dominant parent in 6 cases and the father in 8 cases.

Maximum temperatures ranged from 38.9 to 41.1 degrees C (mean 39.8, SD 0.5). Otitis media with effusion was diagnosed in 22 of the 37 patients. Five of the 37 patients presented with febrile seizures. Only one of the 37 patients was on antibiotics prior to the E.D. visit.

Table 2 stratifies the parental diagnostic test preferences by demographic and clinical variables. In 2 of the 37 cases, parents did not want to make a choice. In these two instances, no diagnostic tests were performed. In 31 of 37 cases, the physician made no recommendation on whether to do any tests. In 25 of these 31 instances, parents chose to do no tests. The physician recommended "no tests" in three cases. Urine studies only were recommended in one case (17 month old female with fever and vomiting), however, parents elected for no tests in this instance. A CBC and blood culture were recommended in one case (24 month old with a febrile seizure in whom the child's primary care physician requested the tests). A complete sepsis work up was recommended in one case (a 3.5 month old). Parents concurred in these two cases.

When a diagnostic test recommendation was made by the physician (6 instances), parents agreed with this recommendation in four instances. In one case, urine studies were recommended and the parent declined this. In one case, the parent declined to make a choice and the physician's recommendation was carried out. Thus, in no instance, did parents request more tests than that recommended by the physician.

Of the 31 cases where the physician did not make a diagnostic test recommendation, there were four cases where parents requested tests. One case was a 17-month old whose parents requested a chest radiograph. In two cases, parents (of an 11-month old and a 3.5-month old) requested a CBC and blood culture. The last case was 24-month old with a febrile seizure whose parents requested a complete sepsis work-up.

Parental diagnostic test preferences did not differ significantly by any of the variables tabulated in table 2. However, the numbers here

**Table 2.—Parental diagnostic study preferences (these tests were the ones actually carried out)**

Parents' preference: (studies consented to)	No Tests	Tests done	Doesn't want to choose
All	29	6	2
Age			
3-5 months	3	2	1
6-12 months	14	1	0
13-36 months	12	3	1
Sex			
Male	16	4	2
Female	13	2	0
Parent			
Mother	16	4	2
Father	1	1	0
Both	12	1	0
Age ≤ 24	13	1	0
Age ≥ 25	16	5	2
Medical Insurance			
Private	13	3	1
Medicaid	15	2	0
None	1	1	1
Doctor's recommendation			
No tests recommended	2	0	1
Tests recommended	1	2	0
No recommendation	26	4	1
Max temperature			
38.9 to 39.9	16	4	1
40.0 to 42.0	13	2	1
Otitis Media			
Present	16	4	2
Not present	13	2	0
Seizure			
Present	3	2	0
Not present	26	4	2

are too small to come to any conclusion.

Table 3 stratifies the parental antibiotic choices by demographic and clinical variables. In three cases, parents declined to make an antibiotic choice. In two of these cases (with otitis media), oral antibiotics were prescribed. In the third case, no antibiotics were prescribed.

There was a physician antibiotic recommendation in 31 of 37 cases (no antibiotics in 1, oral antibiotics in 28, and parenteral antibiotics in 2). Antibiotics were recommended by the physician in all 22 cases in which otitis media with effusion was diagnosed. Parents followed the physician's recommendation in most instances. However, in 8 instances, parents chose parenteral antibiotics when the physician recommended oral antibiotics. In one instance, parents chose no antibiotics when the physician recommended oral antibiotics. In one instance, parents chose oral antibi-

**Table 3.—Parents antibiotic (Abx) preferences (the actual treatments carried out)**

Parents' preference: (treatment consented to)	No Abx	Oral Abx	Parenteral +PO Abx	Doesn't want to choose
All	4	20	10	3
Age				
3-5 months	1	2	3	0
6-12 months	3	6	5	1
13-36 months	0	12	2	2
Sex				
Male	3	11	6	2
Female	1	9	4	1
Medical insurance				
Private	2	10	4	2
Medicaid	2	9	5	0
None	0	1	1	1
Tests done (parents' preference)				
No tests	3	19	6	1
Tests done	1	1	3	1
Doesn't want to choose	0	0	1	1
Physician's antibiotic recommendation				
No recommendation	2	2	1	1
No antibiotics	1	0	0	0
Oral antibiotics	1	17	8	2
Parenteral antibiotics	0	1	1	0
Max temperature				
38.9 to 39.9	3	11	5	2
40.0 to 42.0	1	9	5	1
Otitis Media				
Present	1	13	6	2
Not present	3	7	4	1
Seizure				
Present	0	4	0	1
Not present	4	16	10	2

office. All patients were informed to return to the E.D. if their condition worsened. No patient returned to the E.D. for a follow-up visit or to the hospital for hospitalization.

## Discussion

The possibility that the wording of the information sheet used in this survey may be biasing the decisions of parents is acknowledged<sup>25</sup> The information sheet was written to remain as neutral as possible. Yet the information sheet had to be simple and short. It would be impossible to write an information sheet that is simple, short, and perfectly accurate while satisfying all experts that its wording is perfectly neutral. This less than perfectly accurate and less than perfectly neutral information sheet was adopted realizing its limitations.

It is likely that the preference choices made by parents were substantially influenced by the recommendation of the treating physician. However, the noted trend is that most parents chose no tests in the absence of a physician's recommendation. While most parents followed the physician's antibiotic treatment recommendation, some parents chose more aggressive antibiotic treatment options (parenteral) than the physician's recommendation (oral). The high number of antibiotic recommendations by the physician makes it difficult to determine what the true antibiotic preferences of the parents were. However, many children in this cohort were diagnosed with otitis media with effusion and the risk factors of each individual case had to be weighed by the physician making the individual treatment recommendation to fit the ethical standard of what was felt to be best for the individual child.

While the informed consent information disclosed during this survey was largely limited to that listed in appendix A for most cases, some parents asked for more details regarding specific aspects of their child's condition. The following issues were disclosed in lay terms on an as needed basis. It is obvious, that the disclosure of all these details would not be possible during a single patient encounter.

The frequency of otitis media with effusion<sup>26,27</sup> in this group of patients was high. In all instances, the severity of the otitis media was felt to be low (otitis media with effusion as opposed to acute otitis media).<sup>26,27</sup> Parents were informed of this and in every case, they were informed that such mild otitis media does not reliably account for the fever<sup>28,29</sup> and their child's risk for bacteremia and its complications are no different than a child without otitis media.<sup>30</sup> In patients with otitis media, empiric antibiotics were recommended whether or not blood cultures were obtained. The high frequency of otitis media with effusion accounts for most of the empiric antibiotic recommendations without obtaining a blood culture. Yet in one case of otitis media with effusion, parents declined antibiotics when they were informed that the likelihood of recovery following a course of antibiotics was only slightly better than the likelihood of spontaneous recovery<sup>26,27,31-34</sup> (all parents of children with otitis media were advised of this).

While patients with otitis media may be considered by some to be a "source" of fever, it is often considered to be a source that is not clinically useful in modifying risk since otitis media is associated with a similar risk of bacteremia compared to febrile children without otitis media.<sup>30</sup> Fever without a source can be defined as an instance in which the etiology of the fever is not apparent after a careful history and physical examination.<sup>10</sup> In most instances, it is

otics when the physician recommended parenteral antibiotics.

Parents of 34 of the 37 children indicated that they liked helping the physician decide the treatment for their child. In two cases, parents indicated that they did not like helping the physician decide the treatment for their child. In one instance, a parent could not decide.

Temperatures at discharge declined in 31 of 37 patients compared to their admission temperature. Discharge temperatures were not obtained in two patients who presented with admission E.D. temperatures of 38 degrees or less rectally (fever documented at home). The temperature in one child did not decline. Discharge temperatures in the other three patients were not recorded on the charts. It is possible that the discharge temperatures were not obtained, or they were obtained, but not recorded.

All blood cultures obtained (five) were negative. Follow-up was arranged for all patients in a clinic or their primary care physician's

## Appendix A - Information Sheet

### Information: Tests and Treatment For Children With Fever

Physician's Name, MD, Pediatrician

The doctor has examined your child and has found that the cause of your child's fever is probably not serious. Most of the fever is most likely caused by a virus (like the flu virus). Antibiotics will not help your child get rid of the virus. Since no doctor can be absolutely sure that this fever is only caused by a virus, we must discuss some other possibilities with you.

**1. Bacteria in the blood (bacteremia).** There is roughly a 2% to 10% chance that your child may have bacteria in the bloodstream. This is not necessarily bad. Children with bacteria in the bloodstream will cure themselves most of the time (even without antibiotics). However, about 1% to 5% of the time, a child may get a complication from this (such as one of the infections below). To find out if your child has bacteria in the bloodstream, we must draw a blood sample and grow this sample in the lab for 2 days to see if any bacteria will grow out. We will not be able to find out today if your child has bacteria in the bloodstream. It will take 2 days. We could do a blood count test today to find out if your child is at high risk or low risk of bacteria in the bloodstream, but this test is not always accurate. Many children with bacteria in the bloodstream have normal blood counts and many children with abnormal blood counts do not have bacteria in the bloodstream. If we give your child some antibiotics, this might lower the chance that your child will get worse if your child has bacteria in the bloodstream. An antibiotic shot seems to be better than antibiotics by mouth. If your child has had all his/her immunizations (HIB vaccine), then his/her risk of complications from bacteria in the blood is even lower.

**2. Kidney infection.** There is a small chance that your child might have an infection in the urine or kidneys. Young children don't usually tell us that it burns when they urinate. If untreated, a kidney infection can

get worse and spread infection to the blood and brain. Children with kidney infections often have abnormal kidneys. We won't know about this since you can't feel the kidneys. You can only see them with special X-rays with X-ray dye. To check for urine or kidney infection, we need a sample of urine. We can't ask small children to urinate in a cup so for small children, we get a urine sample by putting a tube in the bladder to let some urine out. Your child won't like this, but it is quick and it won't cause any harm. Sometimes there is some bleeding from this, but this will go away on its own.

**3. Meningitis (infection in the brain).** There are many types of meningitis. Some meningitis is not too bad, but the bad form of meningitis can kill you or cause permanent brain damage unless it is treated early. Children with meningitis usually look very, very sick. They usually have vomiting, a stiff neck, a bulging soft spot, or a bad headache. They are usually fussy, drowsy, or don't look at you well. Since they have a bad headache, this gets worse if you bounce them while carrying (they get more fussy if you do this) or if they jump up and down. A spinal tap is needed to find meningitis. A spinal tap is painful, but it is usually quick (1 to 3 minutes), and it will not harm your child.

**4. Pneumonia (lung infection).** Most pneumonias are not serious if your child's oxygen level is normal (we measured this with the red light). To find out if your child has pneumonia, we need to do a chest X-ray. X-rays can be harmful, but the dose of X-rays in a chest X-ray is very small. Doctors believe this to be very safe.

**Doctor's Survey:** Since your child has fever, you should know that the tests and treatment for this are very controversial. If you ask 10 pediatricians what to do, you will get many different answers. Most office or clinic pediatricians would not do any tests. Some would do blood tests only. Some would do blood tests and a urine test. Other doctors would do all the tests. We would like to give you some choices on how to approach this.

**Please understand that all of these tests are safe.**

## Appendix B - Tests and Treatment Selection Sheet

Doing all these tests is the safest approach. On the other hand, we don't want to do any unnecessary tests.

The doctor recommends:

If you would like us to do more tests or less tests than the doctor recommends, please tell us and we can discuss this.

Do you want us to do these tests ?

- ☐ I don't want to choose, I want the doctor's recommendation.  
☐ Yes ☐ No Blood tests - checking for bacteria in the bloodstream  
☐ Yes ☐ No Urine test - checking for urine or kidney infection  
☐ Yes ☐ No Spinal tap - checking for meningitis (brain infection)  
☐ Yes ☐ No Chest X-ray - checking for pneumonia (lung infection)

Do you want us to treat your child with antibiotics ?

- ☐ No antibiotics  
☐ Antibiotic shots (high dose) - treats some hidden infections, but not guaranteed to prevent worsening  
☐ Antibiotics by mouth - might treat some hidden infections  
☐ I don't want to choose. I want the doctor's Recommendation

Check one:

- ☐ I don't like helping the doctor decide the treatment for my child.  
☐ I like helping the doctor decide the treatment for my child.

You are child's: ☐ Mother ☐ Father ☐ Other

How old are you? \_\_\_\_\_

I understand that doctors do not agree on which tests should be done for fever.

I understand that the doctor has offered me all of these choices.

I understand that no choice is guaranteed to be perfect.

**Benzamycin\***  
(erythromycin-benzoyl peroxide topical gel)  
**Topical gel: erythromycin (3%), benzoyl peroxide (5%)**  
**For Dermatological Use Only – Not for Ophthalmic Use**  
**Reconstitute Before Dispensing**

**Brief Summary—Consult package insert for full prescribing information.**

**INDICATIONS AND USAGE**

BENZAMYCIN\* Topical Gel is indicated for the topical treatment of acne vulgaris.

**CONTRAINDICATIONS**

BENZAMYCIN\* Topical Gel is contraindicated in those individuals who have shown hypersensitivity to any of its components.

**WARNINGS**

**Pseudomembranous colitis has been reported with nearly all antibacterial agents, including erythromycin, and may range in severity from mild to life-threatening. Therefore, it is important to consider this diagnosis in patients who present with diarrhea subsequent to the administration of antibacterial agents.**

Treatment with antibacterial agents alters the normal flora of the colon and may permit overgrowth of clostridia. Studies indicate that a toxin produced by *Clostridium difficile* is one primary cause of "antibiotic-associated colitis."

After the diagnosis of pseudomembranous colitis has been established, therapeutic measures should be initiated. Mild cases of pseudomembranous colitis usually respond to drug discontinuation alone. In moderate to severe cases, consideration should be given to management with fluids and electrolytes, protein supplementation and treatment with an antibacterial drug clinically effective against *C. difficile* colitis.

**PRECAUTIONS**

**General:** For topical use only; not for ophthalmic use. Concomitant topical acne therapy should be used with caution because a possible cumulative irritancy effect may occur, especially with the use of peeling, desquamating or abrasive agents. If severe irritation develops, discontinue use and institute appropriate therapy.

The use of antibiotic agents may be associated with the overgrowth of nonsusceptible organisms including fungi. If this occurs, discontinue use and take appropriate measures.

Avoid contact with eyes and all mucous membranes.

**Information for Patients:** Patients using BENZAMYCIN\* Topical Gel should receive the following information and instructions:

1. This medication is to be used as directed by the physician. It is for external use only. Avoid contact with the eyes, nose, mouth, and all mucous membranes.
2. This medication should not be used for any disorder other than that for which it was prescribed.
3. Patients should not use any other topical acne preparation unless otherwise directed by physician.
4. Patients should report to their physician any signs of local adverse reactions.
5. BENZAMYCIN\* Topical Gel may bleach hair or colored fabric.
6. Keep product refrigerated and discard after 3 months.

**CARCINOGENESIS, MUTAGENESIS AND IMPAIRMENT OF FERTILITY**

Data from a study using mice known to be highly susceptible to cancer suggests that benzoyl peroxide acts as a tumor promoter. The clinical significance of this is unknown.

No animal studies have been performed to evaluate the carcinogenic and mutagenic potential or effects on fertility of topical erythromycin. However, long-term (2-year) oral studies in rats with erythromycin ethylsuccinate and erythromycin base did not provide evidence of tumorigenicity. There was no apparent effect on male or female fertility in rats fed erythromycin (base) at levels up to 0.25% of diet.

**Pregnancy: Teratogenic Effects: Pregnancy CATEGORY C:** Animal reproduction studies have not been conducted with BENZAMYCIN\* Topical Gel or benzoyl peroxide.

There was no evidence of teratogenicity or any other adverse effect on reproduction in female rats fed erythromycin base (up to 0.25% diet) prior to and during mating, during gestation and through weaning of two successive litters.

There are no well-controlled trials in pregnant women with BENZAMYCIN\* Topical Gel. It also is not known whether BENZAMYCIN\* Topical Gel can cause fetal harm when administered to a pregnant woman or can affect reproductive capacity. BENZAMYCIN\* Topical Gel should be given to a pregnant woman only if clearly needed.

**Nursing Women:** It is not known whether BENZAMYCIN\* Topical Gel is excreted in human milk after topical application. However, erythromycin is excreted in human milk following oral and parenteral erythromycin administration. Therefore, caution should be exercised when erythromycin is administered to a nursing woman.

**Pediatric Use:** Safety and effectiveness of this product in pediatric patients below the age of 12 have not been established.

**ADVERSE REACTIONS**

In controlled clinical trials, the total incidence of adverse reactions associated with the use of BENZAMYCIN\* Topical Gel was approximately 3%. These were dryness and urticarial reaction.

The following additional local adverse reactions have been reported occasionally: irritation of the skin including peeling, itching, burning sensation, erythema, inflammation of the face, eyes and nose, and irritation of the eyes. Skin discoloration, oiliness and tenderness of the skin have also been reported.

**DOSAGE AND ADMINISTRATION**

BENZAMYCIN\* Topical Gel should be applied twice daily, morning and evening, or as directed by a physician, to affected areas after the skin is thoroughly washed, rinsed with warm water and gently patted dry.

**Important to the Pharmacist**

**Prior to dispensing, tap vial until powder flows freely. Add indicated amount of ethyl alcohol (70%) to vial (to the mark) and immediately shake to completely dissolve erythromycin. Add this solution to gel and stir until homogeneous in appearance (1 to 1½ minutes). BENZAMYCIN\* Topical Gel should then be stored under refrigeration. Do not freeze. Place a 3-month expiration date on the label.**

**NOTE: Prior to reconstitution, store at room temperature between 15° and 30°C (59° – 86°F).**

**After reconstitution, store under refrigeration between 2° and 8°C (36° – 46°F).**


**Do not freeze. Keep tightly closed. Keep out of the reach of children.**

**Caution:** Federal (U.S.A.) law prohibits dispensing without prescription.

U.S. Patent Nos. 4,387,107 and 4,497,794.

Manufactured by Rhône-Poulenc Rorer Puerto Rico Inc.  
Manati, Puerto Rico

For **DERMIK LABORATORIES, INC.**  
A Rhône-Poulenc Rorer Company  
Collegeville, PA 19426

 **DERMIK LABORATORIES, INC.**  
*Dedicated to Dermatology\**

A RHÔNE-POULENC RORER COMPANY

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not convincing that otitis media is the source of a high fever<sup>28,29</sup> and bacteremia risk is not altered by the presence of otitis media.<sup>30</sup> Additionally, otitis media is poorly defined and it ranges from minimal to severe without an objective standardized severity scale.<sup>26,27</sup> Otitis media results in fever in roughly 50% of cases.<sup>28,29</sup> Febrile children with otitis media often have a concurrent viral infection<sup>28,29</sup> (and occasionally bacteremia<sup>30</sup>) which may be the actual cause of the fever rather than the otitis media itself. Because otitis media cannot be reliably considered to be the source of a fever, these children should be considered at similar risk for bacteremia.

Anecdotally, parents seemed to feel some relief when their

of the E.D. visit was briefer than usual, all parents were willing to stay in the E.D. for up to 45 minutes for a period of observation and follow-up vital signs and clinical assessments.

Parents were informed that "expert" recommendations vary. This listing in table 1 is not meant to be complete, but rather to illustrate the spectrum of recommendations (for a more complete reference list, refer to Singer, et al<sup>19</sup>). Note that most of these reports are not publishing recommendations based on newly acquired data, but rather rely on data collected in the past. The two recent studies of children (Bass<sup>12</sup> and Fleisher<sup>14</sup>) both focused on comparing oral antibiotics with parenteral antibiotics. Given the widespread use of

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*H. influenzae* B vaccine in infants, it is likely that the most virulent of the common bacteremia organisms is likely to be less prevalent if a study of bacteremia were to be repeated today. Thus, the conclusions reached by even the most recent of studies available to us may only have limited applicability to the contemporary cohort of children. The likelihood of a bad outcome is likely to be lower currently, than it has been in the past.<sup>18</sup>

Although empiric antibiotics are often administered without obtaining a blood culture, this choice receives negative reviews from most experts, because it does not permit clinicians to identify patients with bacteremia.<sup>8,18</sup> It may also mask other existing infections such as meningitis and urinary tract infections. The magnitude of this potential problem is difficult to measure. In discussions with parents, this issue does not appear to concern them as much as other issues. In fact, the most frequent diagnostic/therapeutic choice was that of no tests with oral antibiotics (most of these cases had otitis media). It should be noted that:

1. The practice of administering a 10-day course of oral antibiotics without a blood culture is done very frequently in offices and emergency departments in the routine treatment of fever associated with otitis media. The frequency of bacteremia and its complications in children with otitis media is argued to be roughly similar to that of similar children without otitis media.<sup>14, 30</sup> The number of these febrile children who are not cultured probably greatly outnumber patients in the E.D. identified as at risk for occult bacteremia. Yet there has been no substantial published concern recommending blood and/or urine cultures for febrile children prior to antibiotic treatment for otitis media.

2. Despite obtaining a blood culture, the decision of whether to hospitalize a patient with pneumococcal bacteremia is based on the patient's clinical status (persistent fever vs. afebrile and well-appearing) at the time of the positive blood culture (1 to 3 days later) and not solely on the blood culture (unless it is positive for a more virulent organism).<sup>8,9</sup> Thus, regardless of the blood culture results (positive, negative, or not obtained) and regardless of whether a patient is on antibiotics at the time of follow-up, patients who are not doing well, should be investigated and treated more aggressively.<sup>8,9</sup>

This small survey of patients and parents described in this report demonstrates that most parents are willing to digest substantial amounts of medical information in a reasonably short period of time. The degree to which they understand this information was not measured in this survey. In the typical patient encounter, comprehension cannot always be objectively and accurately assessed. Clinicians must generally rely on communication skills and feedback from the patient/parents to assess comprehension. In this survey, once parents received the information, nearly everyone was willing to express a preference and in most instances, their preference was not in favor of performing tests. Nearly everyone preferred to participate in the medical decision making involving their child. While this process was extremely time-consuming for the clinician and possible only during periods of low E.D. census, most parents seemed to appreciate the information and time spent.

Since the diagnostic and therapeutic decisions involved in the febrile child at risk for occult bacteremia are controversial, it is difficult to say with certainty that any given approach is scientifically superior to all other approaches. Despite the lack of scientific certainty, practice guidelines have been published.<sup>8,9</sup> Practicing pediatricians do not appear to consistently follow these guide-

lines<sup>23,24</sup> and thus, the controversy has not ended.<sup>43-45</sup> While physicians may often feel the need to obtain a blood culture and administer ceftriaxone to febrile children who do not appear ill, would they take this same approach for their own son or daughter? One study indicates that they would not follow the practice guidelines for their own child.<sup>46</sup> Regardless, this choice, which is available to physicians, may not be offered to other patients if the practice guideline recommendations are imposed upon patients without disclosure of alternatives. Informed consent contemplates that patients should collaborate with physicians in developing and evaluating treatment options, with patients having a veto over any proposed treatment.<sup>2</sup>

Similarly in this report, parents were given information on the issue of febrile children (without a source). Informed consent should disclose to patients all information "material" to making a decision whether to undergo or forgo a proposed treatment or diagnostic procedure.<sup>1,2</sup> This would include the disclosure of risks, benefits, and alternatives.<sup>1,2</sup>

Medical legal liability concerns with informed consent raise additional controversy.<sup>6</sup> Are parents capable of making informed consent decisions? Will physicians be held liable if physicians comply with parents' preferences? Does involving the parents in the decision making process result in more liability risk or less liability risk?

The above questions are difficult to answer and these issues are beyond the scope of this report. However, if the choice is to disclose or withhold information about alternative approaches (discussion of the range of diagnostic and therapeutic strategies), the doctrine of informed consent states that we must not withhold the information, regardless of what one's opinion of the medical legal liability consequences is.<sup>2</sup> While this may be ideal from an informed consent perspective, most practicing physicians find this to be extremely time consuming and often not possible in their practice.

A general principle of reducing malpractice risk is to disclose and acknowledge the presence of uncertainty with patients. While physicians prefer to form clear and accurate diagnoses and treatment plans for their patients, uncertainty exists.<sup>47</sup> It should be accepted by and acknowledged by the physician and the patient. Disclosing the issues of controversy acknowledges this uncertainty.<sup>47</sup> When uncertainty presents choices, people make decisions appropriate to a level of risk that they can tolerate. The "process model" of informed consent (where patient and physician interact in an ongoing relationship sharing information, clinical results, diagnostic/therapeutic choices/recommendations, and personal/cultural preferences<sup>2</sup>) provides an opportunity to establish a therapeutic alliance between physician, patient, and family<sup>48</sup> where the physician, patient, and family are all co-active in sharing responsibility<sup>49</sup> and hence, risk. Many health care risk managers agree that such a process might reduce malpractice risk.<sup>48</sup>

In this survey, patients weighed the potential harm and discomfort to their child from tests and treatments against the potential benefit of the same. Since the tests and treatments are largely harmless, the dominant negative factor remaining is pain sustained by their child. Thus, most parents did not perceive the benefits of blood culture to outweigh the pain consequence. The practice guidelines recommending blood work on all these patients<sup>8,9</sup> would suggest that the wisdom of experts should outweigh the wisdom of parents. The monetary cost of the tests was never considered by patients in this survey. Nearly all the patients were insured and their out of pocket



expenses for a CBC and blood culture would range from zero in most instances to up to 20% of the insurance carrier's pre-negotiated preferred laboratory rates. Thus, most parents declined the tests even if their out of pocket expenses were zero or a minimal cost.

These results are consistent with those found in a focus group of 33 parents choosing treatment options for a hypothetical 6-week old infant with fever, in which parents tended to choose options that involved less testing and more risk.<sup>20</sup> Another study demonstrated that parents and physicians differ in the way they value the benefits and consequences of the tests, treatments, and outcomes of children at risk of bacteremia.<sup>50</sup> Parents emphasize the short-term pain, discomfort, and inconvenience of the tests and are more willing to risk rare but severe long-term morbidity to avoid the short-term consequences of testing.<sup>50</sup> These factors account for the findings of our survey.

While physicians may find it less time consuming (and often preferable) to impose their diagnostic and therapeutic plans upon patients, informed consent requires that we spend more time with patients discussing significant alternatives. This report shows that this can be done even in a complex and controversial clinical decision making scenario such as this. This process, however, is very time consuming. A standardized information sheet reviewed by a nurse may be a more efficient way of insuring informed consent. This process would be similar to condition specific discharge information sheets that are reviewed with patients by nurses or physicians at discharge. Such condition specific information sheets can be composed for other conditions where decision making is complex and controversial to optimize and document the process of informed consent.

In summary, favorable points of informed consent are presented where risks, benefits, and alternatives are disclosed. From the data presented, we can conclude the following: 1) Parents overwhelmingly prefer to be included in the medical decisions affecting their child. 2) Under the circumstances of this study, most parents were not in favor of obtaining CBC's and/or blood cultures. 3) No conclusion can be drawn regarding the empiric antibiotic preferences of parents since antibiotics were recommended by the treating physician in most instances. 4) The process of informed consent is time consuming and often not possible when the E.D. is busy. Physicians may find it desirable to make decisions from an informed consent perspective to a comfort level dependent on time availability, parents' comprehension ability, and individual personal practice preference.

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